

CLAIMS

1. A projection display device comprising:

an acquiring means for acquiring a pixel value and a depth value for each of a plurality of pixels constituting an image;

5 a light output means for outputting light per pixel according to the pixel value;

a light guide body for guiding the light output per pixel from the light output means to a position corresponding to the pixel on a projection surface; and

10 a control means for changing a light path length of the light output per pixel from the light output means to the projection surface according to the depth value of the pixel.

2. A projection display device comprising:

15 an acquiring means for acquiring a pixel value and a depth value for each of a plurality of pixels constituting an image;

a light output means for outputting light per pixel according to the pixel value;

20 a reflector having light reflecting surfaces that oppose each other, and for guiding the light output per pixel from the light output means to a position corresponding to the pixel on a projection surface by reflecting the light with the reflecting surfaces; and

25 a control means for changing a number of times that the light output per pixel from the light output means is reflected by the light reflecting surfaces of the reflector according to the depth value of the pixel.

3. The projection display device according to claim 2, wherein the control means changes the number of times the light is reflected in the reflector so that the reflected number of times increases the larger the depth value.

4. The projection display device according to claim 2, further comprising:
a reflecting member for guiding the light output from the light output
means to the reflector by reflecting the light, wherein

the control means drives the reflecting member so that an angle at
5 which the light reflected by the reflecting member is incident on the light
reflecting surfaces of the reflector depends on the depth value.

5. The projection display device according to claim 4, wherein
the reflecting member is supported so that an angle relative to a
10 direction of the light output from the light output means is changeable, and
the control means controls the angle of the reflecting member
according to the depth value.

6. The projection display device according to claim 4, wherein
15 the reflecting member is supported so as to be rotatable on a rotary
shaft, and has a reflecting surface whose angle relative to a direction of the
light output from the light output means changes in a circumferential
direction of the rotary shaft, and

the control means rotates the reflecting member to an angle that
20 depends on the depth value.

7. The projection display device according to any of claims 4 to 6,
wherein the control means drives the reflecting member so that an angle at
which the light reflected by the reflecting member is incident on the light
25 reflecting surfaces of the reflector depends on the depth value, and makes
the reflecting member oscillate in the driven state.

8. The projection display device according to claim 2, further comprising
a light flux adjusting means for changing a light flux cross-sectional area of
30 the light output from the light output means according to the depth value.

9. The projection display device according to claim 8, wherein
the control means changes the reflected number of times in the
reflector so that the reflected number of times increases the larger the depth
5 value, and

the light flux adjusting means changes the light flux cross-sectional
area of the light output from the light output means so that the light flux
cross-sectional area increases the larger the depth value.

10 10. The projection display device according to claim 2, further comprising:
a correction means for correcting the depth value of each pixel
according to the position corresponding to the pixel on the projection surface,
wherein

the control means controls the number of times the light output from
15 the light output means is reflected by the reflecting surfaces of the reflector
according to the depth value after correction by the correction means.

11. The projection display device according to claim 10, wherein
the correction means corrects the depth value so that when the same
20 depth value is given to one pixel and another pixel, the light path lengths of
the light output from the light output means to the projection surface for the
one pixel and the other pixel are substantially the same.

12. A projection display system comprising a screen that has a projection
25 surface and a projection display device for projecting an image onto the
screen, the projection display device including:

an acquiring means for acquiring a pixel value and a depth value for
each of a plurality of pixels constituting an image;

a light output means for outputting light per pixel according to the
30 pixel value;

a light guide body for guiding the light output per pixel from the light output means to a position corresponding to the pixel on the projection surface; and

a control means for changing a light path length of the light output per pixel from the light output means to the projection surface according to the depth value of the pixel.

13. The projection display system according to claim 12, wherein the projection surface of the screen is composed of a first reflecting surface for reflecting the light output from the projection display device, and a second reflecting surface for reflecting the light reflected by the first reflecting surface on a viewing side, the first and second reflecting surfaces being arranged in sheets.

14. The projection display system according to claim 13, wherein the first reflecting surface is substantially horizontal, and the second reflecting surface forms a prescribed angle with the first reflecting surface.

15. The projection display system according to claim 14, wherein the second reflecting surface is substantially planar.

16. The projection display system according to claim 14, wherein the second reflecting surface is divided into a plurality of unit portions, each of which is a curved surface whose center protrudes more than a periphery thereof.

17. The projection display system according to claim 13, wherein the first reflecting surface is divided into a plurality of unit portions whose angle relative to a horizontal surface is selected for each unit portion according to an angle at which the light output from the projection display device reaches

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the unit portion.